JUMO dTRANS T02

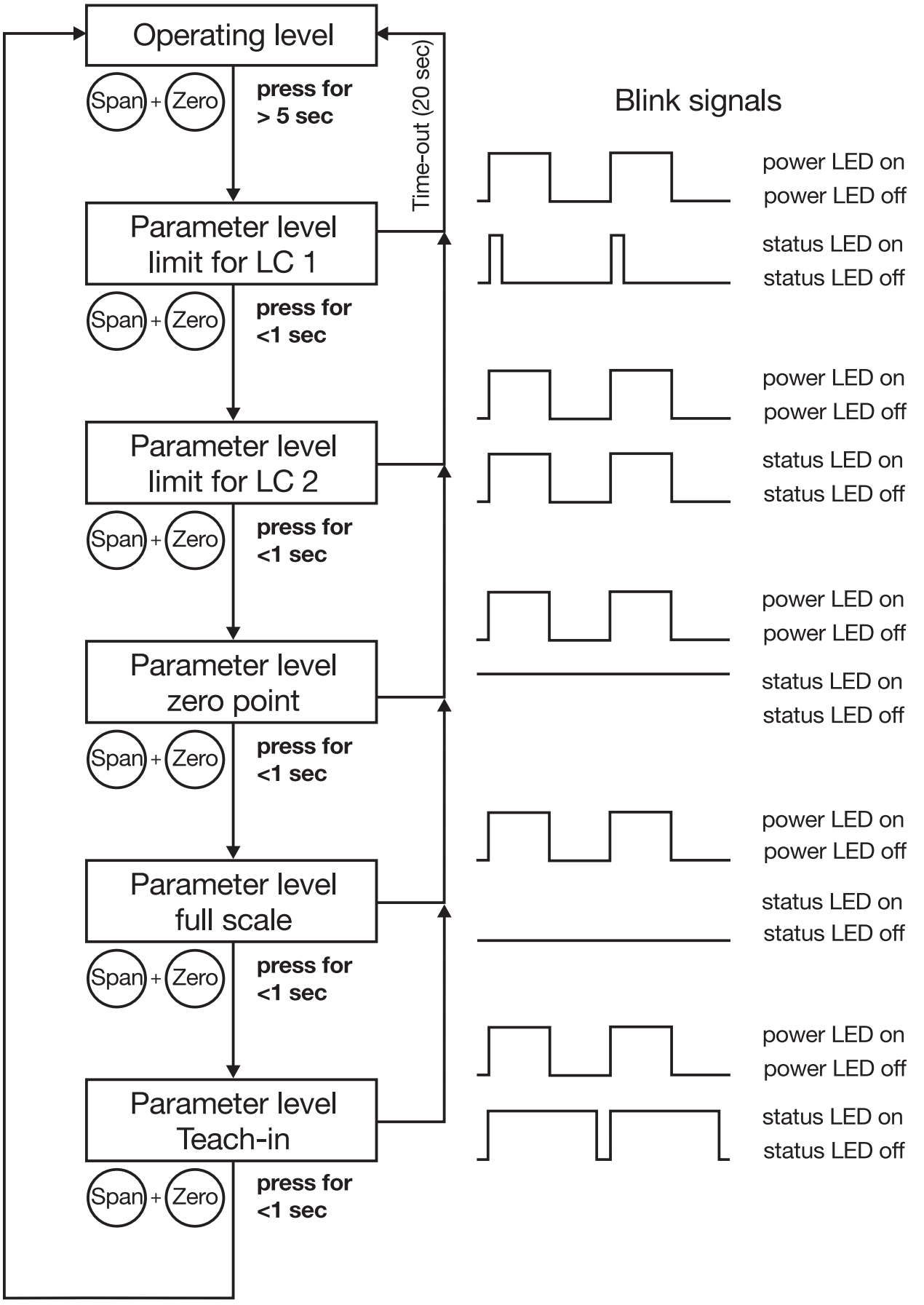
programmable

transmitter

B 95.6521
Operating Instructions

5.00/00380664

Overview of operation



1 Type designation

JUMO dTRANS T02

		(1)	**Basic version**
	956521		programmable transmitter
		(2)	**Input (programmable)**
x	888		factory-set (Pt100 DIN vl)
x	999		customized configuration[1]
		(3)	**Output (proportional DC current - programmable)**
x	888		factory-set (0 — 20mA)
x	999		customized configuration (4 — 20mA or 0 — 10V)
		(4)	**Supply**
x	22		20 — 53V AC/DC, 48 — 63Hz
x	23		110 — 240V +10/-15% AC, 48 — 63Hz

	(1)		(2)		(3)		(4)
Order code		**/**		**-**		**-**	
Order example	**956521**	**/**	**888**	**-**	**888**	**-**	**23**

1. For customized configuration, please specify sensor type and range in plain text

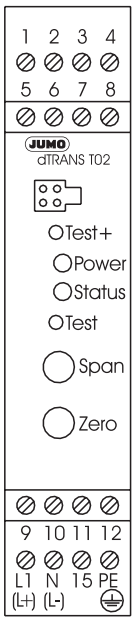
Standard accessory

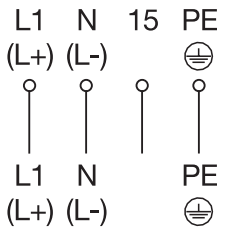
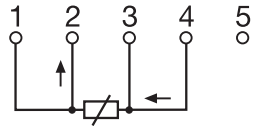
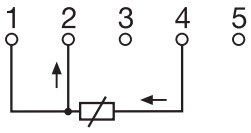
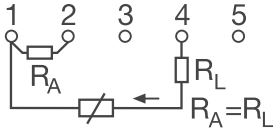
- 1 Operating Instructions 95.6521

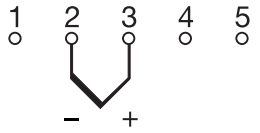
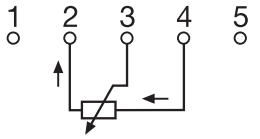
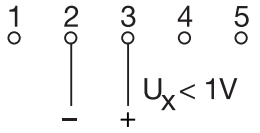
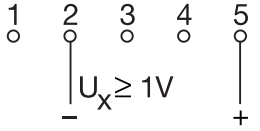
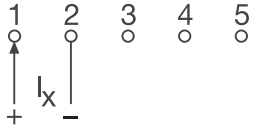
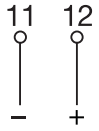
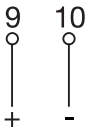
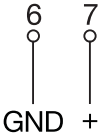
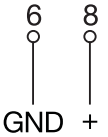
Accessories

- PC setup program, multilingual
- PC interface cable with TTL/RS232 converter and adapter

Connection diagram



Connection for	
Supply	
Analog inputs	
Resistance thermometer / potentiometer in 4-wire circuit	
Resistance thermometer / potentiometer in 3-wire circuit	
Resistance thermometer / potentiometer in 2-wire circuit $R_L \leq 15\Omega$ (R_L = lead resistance per conductor)	

Thermocouple	
Resistance transmitters in 3-wire circuit	
Voltage input up to 1V	
Voltage input 1V and above	
Current input	
Analog outputs	
Voltage output	
Current output	
Digital outputs	
Open-Collector output 1	
Open-Collector output 2	

2 Installation

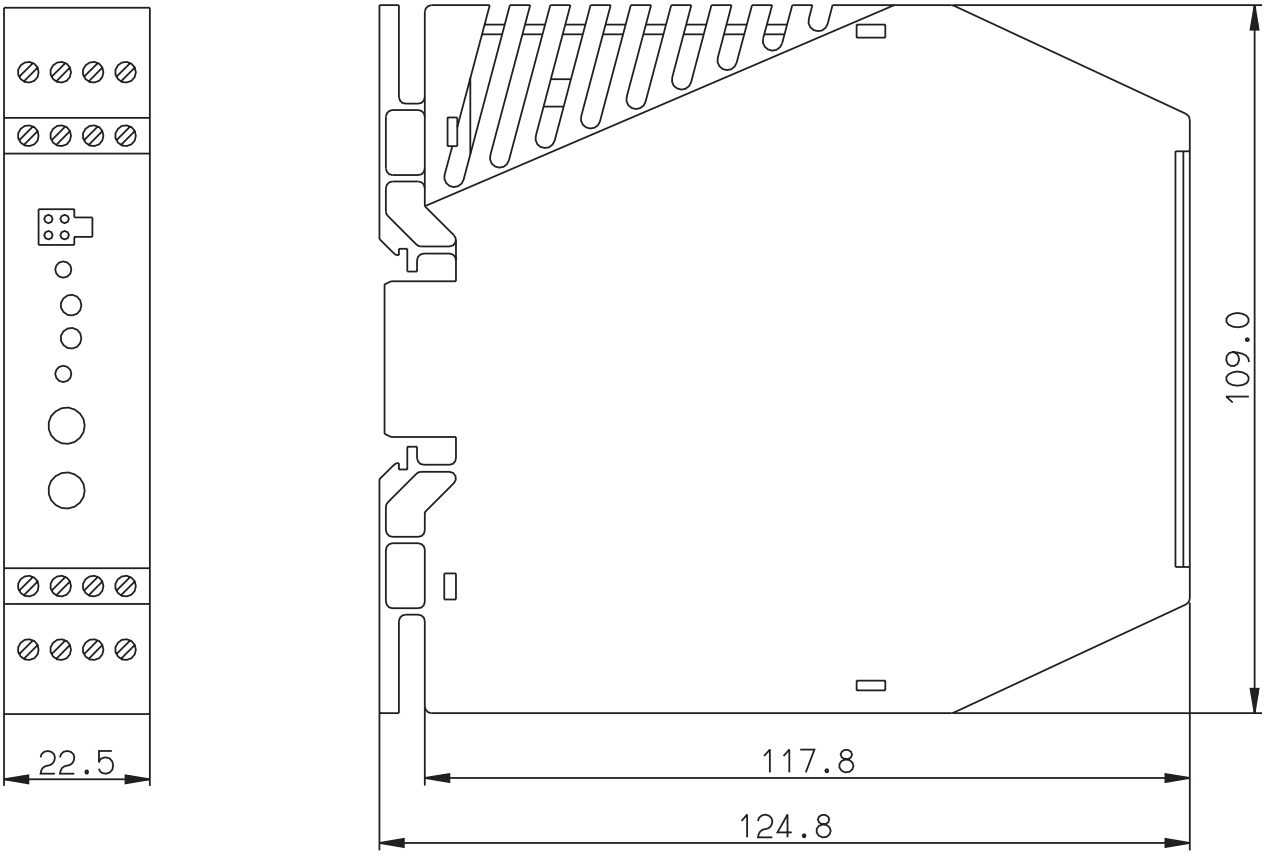
Installation notes

- The choice of cable, the installation and the electrical connection must conform to the requirements of VDE 0100 “Regulations on the Installation of Power Circuits with nominal voltages below 1000V”, or the appropriate local regulations.
- The electrical connection, as well as work inside the instrument, must only be carried out by properly qualified personnel.
- Ensure that the instrument is completely isolated from the supply before carrying out work where live components may be touched.
- A current limiting resistor (safety function) interrupts the supply circuit in the transmitter in the event of a short-circuit. The external fuse of the supply should not be rated above 1A (slow).
- Avoid magnetic or electric fields, such as caused by transformers, mobile phones or electrostatic discharge, in the neighborhood of the instrument[1].
- Do not install inductive loads (relays, solenoid valves etc.) in the vicinity of the instrument; use RC networks, spark quenchers or freewheel diodes for interference suppression.
- Run input, output and supply lines separately, and not parallel to each other. Route cable pairs close together and twisted, if possible.
- Sensor lines must be twisted and shielded. Do not run them close to current-carrying components or cables. Earth the shielding at one end on the instrument.
- Do not connect any additional loads to the supply terminals of the instrument.
- The instrument is not suitable for operation in areas with an explosion hazard.

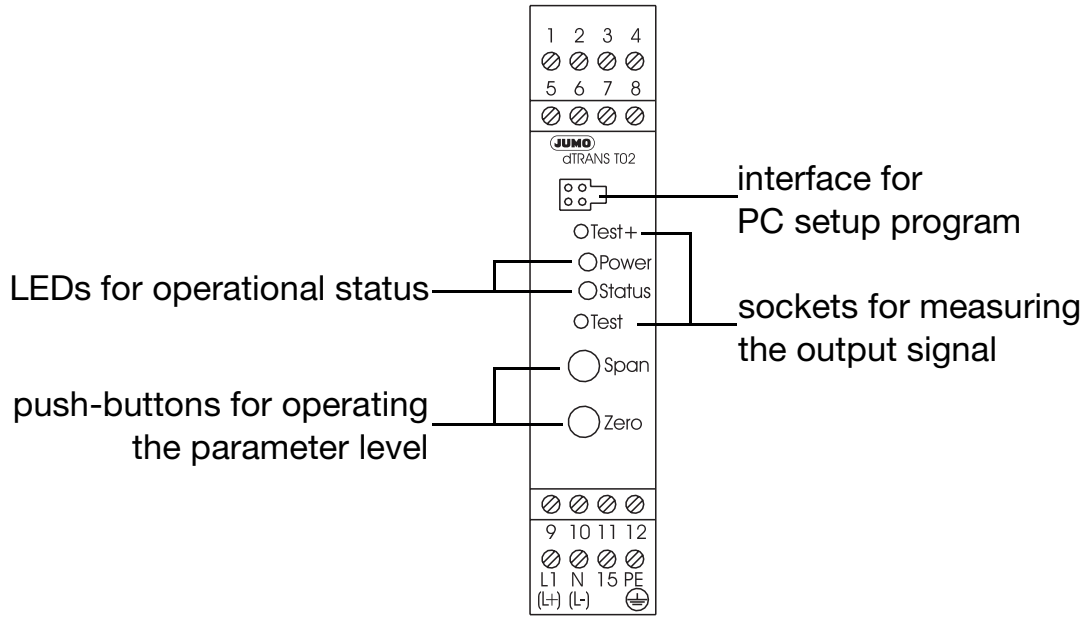
- An electrical connection which deviates from the connection diagram may result in the destruction of the instrument.
- If the mains supply is subject to interference (e. g. thyristor controls), the instrument should be supplied via a isolating transformer.
- Supply fluctuations are only permissible within the specified tolerances[1].

1. see Data Sheet

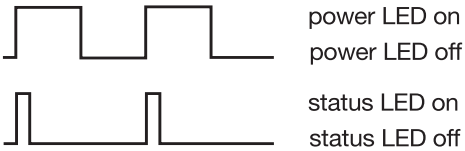
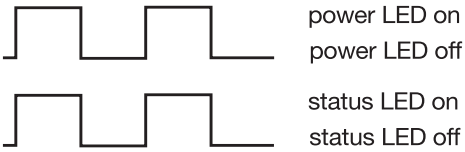
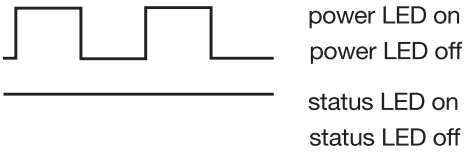
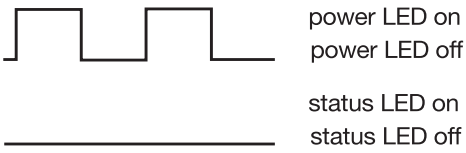
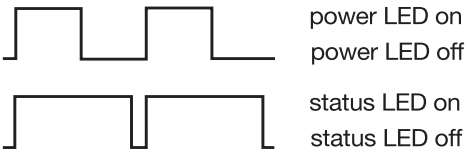
Dimensions



3 Displays and controls



Operational status at the operating level (normal operation)	**Illumination/blink behavior**
Limit comparator 1 inactive 2 inactive	power LED on power LED off status LED on status LED off
Limit comparator 1 active 2 inactive	power LED on power LED off status LED on status LED off
Limit comparator 1 inactive 2 active	power LED on power LED off status LED on status LED off
Limit comparator 1 active 2 active	power LED on power LED off status LED on status LED off
Overrange	power LED on power LED off status LED on status LED off

Operational status at the parameter level (programming mode)	Illumination/blink behavior
Limit for limit comparator 1	
Limit for limit comparator 2	
Fine calibration (zero point)	
Fine calibration (full scale)	
Teach-in (0 % value)	

Differentiation of the operational states

- In the **Operating level** status, the power LED is on permanently.
- In the **Parameter level** status, the power LED blinks (equally on and off).

4 Functions and operation

You can operate the transmitter by using the “Span” and “Zero” push-buttons in conjunction with the blink cycles of the “Power” and “Status” LEDs that have already been described in Chapter 3 “Displays and controls”.

In use, two operating states can be distinguished:

- Operating level (normal operation)
- Parameter level (programming mode)

Operating level

The transmitter is at the operating level two seconds after power-on, or after leaving the parameter level.

Parameter level

You can access the parameter level by simultaneously pressing the push-buttons “Span” and “Zero” (for at least 5 seconds). The following functions can be programmed at this level:

- Limit value for limit comparator 1
- Limit value for limit comparator 2
- Fine calibration (zero point)
- Fine calibration (full scale)
- Teach-in

The parameter level is exited (quit) after editing the “Teach-in” parameter, or if no push-button has been pressed for at least 20 seconds.

The individual parameters can be altered, one after another. You can move from parameter to parameter by simultaneously pressing the two push-buttons “Span” and “Zero” for **less than 1** second.

Incrementing values

The “Span” push-button is used to increase a value (+) when programming the parameters “Limit 1 and 2” and “Fine calibration” (zero point and full scale).

Decrementing values

The “Zero” push-button is used to decrease a value (-) when programming the parameters “Limit 1 and 2” and “Fine calibration” (zero point and full scale).

Accepting values

If a setting has been altered, the push-button combination “Span” + “Zero” has to be pressed simultaneously, to accept the alteration.

The “Span” + “Zero” combination has a twofold function:

- Acceptance of altered values

- Calling the next parameter

Value check

During programming, the momentary value can be checked at the test sockets (Test + and Test -) with the aid of an ammeter, or at the voltage output using a voltmeter.

☞ With activated parameter level, the analog output will not be operated according to the input circuit connection when programming the two limit values but with the momentary limit value.

☞ Please note that the programming of the “Teach-in” parameter deviates from the standard operation.

See “Teach-in” on page 12.

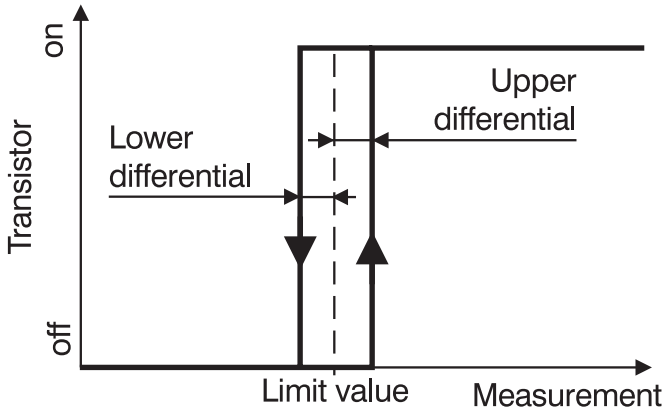
Setting the limit values (limit comparators)

You can alter the limit values by using the “Span” and “Zero” push-buttons. The momentary value will be produced via the output. The value is accepted by simultaneously pressing “Span” and “Zero”.

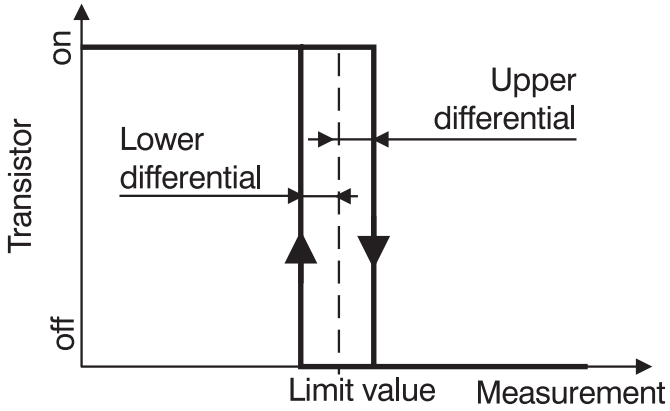
“Span” and “Zero” can always be used to set the limit values. However, the limit query can only be activated through the PC setup program, which is available as an extra code. There you can also define the limits for the differential.

Two functions are available for limit monitoring. With the help of the setup program, you can decide which one to use.

Function lk7:



Function lk8:



Fine calibration (zero point and full scale)

Fine calibration can be used to adjust the zero point and the slope of the output signal. Here, too, the “Span” and “Zero” push-buttons are available for altering the appropriate value, or for accepting it by simultaneously pressing both push-buttons.

The converted value is produced at the output. At zero point, this should correspond to the output signal 0 %, at full scale to the output signal 100 %.

The formula for calculating the new converted value is:

output (converted) value = measurement (input) $value_{scaled}$ x full scale + zero point

Teach-in

The “Teach-in” parameter serves to define the 0 % value.

During programming, the zero point (e.g. 4 mA) is produced at the output. This value is accepted by pressing the “Zero” push-button (“Zero” only, **not** together with “Span”). After a time-out without acceptance, the old value will be available again.

Example:

The position of a valve is detected by a potentiometer. The potentiometer covers the range 50 to 150 Ω, with 50 Ω corresponding to the valve closed. The range is programmed as follows:

- Potentiometer 50 — 150 Ω
- Output 0 — 20 mA

However, because of mechanical tolerances, the potentiometer position is 52 Ω with the valve closed, which results in an output current of 0.4 mA. Thanks to the “Teach-in” function, this error can be eliminated as described below:

- Close valve
- Call parameter level and select “Teach-in” (0.4 mA should then be present at the output).
- Press the “Zero” push-button – the output must now change to 0 mA.
- Confirm alteration by simultaneously pressing the “Span” and “Zero” push-buttons.
- Exit the parameter level (either after a time-out of 20 sec, or by pressing “Span and Zero“ again).

... on operation within the parameter level

☞ A value can only be confirmed by pressing the “Span” and “Zero” push-buttons simultaneously when at least one of the two push-buttons has previously been pressed by itself.

If this is not the case, the confirmation will be interpreted as a call of the next parameter.

☞ If both buttons are to be pressed simultaneously but one of them is pressed too early by mistake, an automatic **value alteration** will occur.

When „Span“ and „Zero“ are subsequently properly pressed simultaneously, this will initially prompt the acceptance of the altered value. Only when both push-buttons are pressed again, will the next parameter (or normal operation) be called up.

☞ If, after an unintended alteration, the value is not to be accepted, just wait for the time-out of 20 sec. Afterwards, the instrument will automatically jump back to normal operation without accepting the alteration.

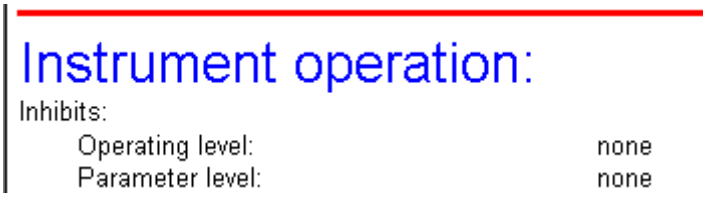
☞ Please note that the programming of the “Teach-in” parameter differs from the standard operation.

See “Teach-in” on page 12.

☞ It is always possible to set the limit values via the “Span” and “Zero” push-buttons. However, the limit query can only be activated with the aid of the setup program, which is available as an extra code. You can also define the differential limits there.

... of a more general nature

If none of the parameters can be altered, then you may have locked the operation on the instrument through the setup program. Please check the setting with the help of the setup program.



The instrument settings can only be changed when “Operating level” and “Parameter level” are set to “none”.

Both outputs (current and voltage) are always available at the same time. However, the output that has not been activated in the setup program, or by the default setting, only has an accuracy of approximately ± 2 % of full scale.

The frequency output will not be operated as long as the setup plug remains plugged in.

6 PC setup program

Operation on the transmitter permits the alteration of only a few parameters. Using the PC setup program, which is available as an extra code, all parameters of the transmitter can be conveniently altered. Through the setup interface, the transmitter and the PC are connected to each other via the “PC interface with TTL/RS232 converter and adapter”.

Configurable parameters

- TAG number (10 characters)
- analog input (sensor type)
- connection circuit (2-/3-/4 wire)
- external or constant cold junction
- customized linearization
- range limits (start and end)
- output signal current/voltage/frequency rising/falling
- digital filter
- response to probe break/short-circuit
- recalibration/fine calibration
- instrument calibration
- limit value/differential of limit comparators
- file-info text

Additional benefits of the PC setup program

- manage several different settings
- one setting for a number of transmitters
- print out setting for documentation
- operation can be switched to GMA standard

The frequency output will not be operated as long as the setup plug remains plugged in.

M. K. JUCHHEIM GmbH & Co

Street address:
Moltkestraße 13 - 31
36039 Fulda, Germany
Delivery address:
Mackenrodtstraße 14
36039 Fulda, Germany
Postal address:
36035 Fulda, Germany
Phone: +49 (0) 661 60 03-0
Fax: +49 (0) 661 60 03-5 00
E-Mail: mail@jumo.net
Internet: www.jumo.de

JUMO Instrument Co. Ltd.

JUMO House
Temple Bank, Riverway
Harlow, Essex CM20 2TT, UK

Phone: +44 (0) 1279 63 55 33
Fax: +44 (0) 1279 63 52 62
E-Mail: info@jumoinstruments.fsnet.co.uk

JUMO PROCESS CONTROL INC.

735 Fox Chase,
Coatesville, PA 19320, USA
Phone: 610-380-8002
1-800-554-JUMO
Fax: 610-380-8009
E-Mail: info@JumoUSA.com
Internet: www.JumoUSA.com